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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/307,574	05/07/1999	Phillip Mattison	042390.P4577	5046

7590

04/15/2003

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EXAMINER

LUU, THANH X

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 04/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/307,574

Applicant(s)

MATTISON, PHILIP E.

Examiner

Thanh X Luu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 February 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16, 18-24, 26-36 and 38-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16, 18-24, 26-36 and 38-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 May 1999 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to amendments and remarks filed February 18, 2003. Claims 16, 18-24, 26-36 and 38-42 are currently pending.

Drawings

1. Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 18, the claim is dependent from itself. Thus, it is unclear in its given context what the scope of the claim is. For examination purposes, Examiner has assumed that claim 18 is dependent from claim 16.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claim 16 is rejected under 35 U.S.C. 102(e) as being anticipated by Borg et al. (U.S. Patent 6,476,864).

Regarding claim 16, Borg et al. disclose (see Figure 3B) an apparatus comprising: an analog photocell (any one of 10); a sample and hold amplifier, hereinafter S/H amplifier (230 or 240), a first input (column line) of the S/H amplifier being an output from the analog photocell, a second input to the S/H amplifier being a reference voltage (Ref. Voltage 88), the S/H amplifier producing an output that is a scaled version of the output of the analog photocell, the scaled version of the output of the analog photocell being based at least in part on the reference voltage; an analog to digital converter, hereinafter A/D converter (220), the A/D converter converting the output of the S/H amplifier to a digital value. That is, since the reference voltage of Borg et al. changes a level of the signal, the scaled output is based at least in part on the reference voltage (scaled voltage with a level change).

5. Claims 16 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsay et al. (U.S. Patent 6,529,237).

Regarding claim 16, Borg et al. disclose (see Figure 1) an apparatus comprising: an analog photocell (any pixel in CCD 10); a S/H amplifier (14), a first input (12) of the S/H amplifier being an output from the analog photocell, a second input to the S/H amplifier being a reference voltage (22 or see Figure 5, voltage (not shown) to switch capacitors), the S/H amplifier producing an output that is a scaled version of the output of the analog photocell, the scaled version of the output of the analog photocell being

based at least in part on the reference voltage; an A/D converter (18), the A/D converter converting the output of the S/H amplifier to a digital value (20).

Regarding claim 24, Tsay et al. disclose (see Figure 1) a method comprising: inputting a charge of an analog photocell (any pixel of CCD 10) to a S/H amplifier (14); inputting a reference voltage (22 or see Figure 5, voltage (not shown) to switch capacitors) to the S/H amplifier; modifying the scale (programmable gain control) of the analog photocell charge using the S/H amplifier, the modification of the scale of the analog photocell charge being based at least in part on the reference voltage; and converting (with 18) an output of the S/H amplifier to a digital value (20).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 18, 19, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsay et al. in view of Kanda et al. (U.S. Patent 5,929,905).

Regarding claims 18, 19, 26 and 27, Tsay et al. disclose the claimed invention as set forth above. Further, since the photocell of Tsay et al. detects an image scene, light from ambient sources or ambient light conditions is exhibited in the detected signal. The S/H amplifier scales the detected signal, thus, the output of the S/H amplifier is based on ambient light conditions. Tsay et al. do not specifically disclose matching the dynamic range of the photocell with the dynamic range of the A/D converter. Kanda et

al. teach (see column 3, lines 14-19) matching the dynamic range of a photocell to the dynamic range of subsequent circuits. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to match the dynamic range of the elements as claimed in the apparatus and method of Tsay et al. in view of Kanda et al. to improve detection.

8. Claims 20-23 and 28-36 and 38-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsay et al. in view of Gordon et al. (U.S. Patent 3,833,903).

Regarding claims 20-22 and 28-30, Tsay et al. disclose (see Figure 1) the apparatus and method as claimed, as set forth above. However, Tsay et al. do not specifically disclose the specific structure of the A/D converter. Gordon et al. teach (see Figure 2) an A/D converter comprising a voltage controlled oscillator (46), hereinafter VCO, an input of the VCO being an analog input; and a counter (50) being driven by the output of the VCO. Thus, Gordon et al. recognize (see column 1, lines 37-39) the configuration serves as a simple and inexpensive A/D converter. Further, the counter inherently stores value into a memory or register otherwise the count is lost. Gordon et al. also teach (see Figure 2) the counter is reset (RESET) after a certain period of time. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the A/D converter of Gordon et al. in the apparatus and method of Tsay et al. as desired to reduce the cost and complexity of the apparatus.

Regarding claims 32, 33, 36, 38, 39, 41 and 42, Tsay et al. disclose (see Figure 1) a digital photocell and method, comprising: an analog photocell (any one of 10); a S/H amplifier (14), a first input of the S/H amplifier being an output of the analog

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photocell and a second input of the S/H amplifier being a reference voltage (22 or see Figure 5, voltage (not shown) to switch capacitors). Tsay et al. further disclose (see Figure 1) the S/H amplifier scaling the output based at least in part on the reference voltage. Tsay et al. also disclose (see Figure 1) the photocell (10) is included in a pixel array (CCD). In addition, Tsay et al. disclose an A/D converter connected to the output of the S/H amplifier. Further, since the S/H amplifier amplifies, the S/H amplifier scales its input. Also, Tsay et al. do not specifically disclose of a VCO or a counter. However, Gordon et al. teach (see Figure 2) an A/D converter comprising a VCO (46), an input of the VCO being an analog input; and a counter (50) being driven by the output of the VCO. Thus, Gordon et al. recognize (see column 1, lines 37-39) the configuration serves as a simple and inexpensive A/D converter. Also, since the input of the VCO is based on an input from an S/H amplifier (which has input from the photocell), the input to the VCO is scaled based on ambient light levels. Further, the counter inherently stores value into a memory or register otherwise the count is lost. In addition, since the output of the counter is the converted digital value, the count is inherently proportional to the intensity of the light incident on the analog photocell. Gordon et al. also teach (see Figure 2) the counter is reset (RESET) after a certain period of time. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the A/D converter of Gordon et al. in the apparatus and method of Tsay et al. as desired to reduce the cost and complexity of the apparatus.

Regarding claims 23, 31, 34, 35 and 40, Tsay et al. in view of Gordon et al. disclose the claimed invention as set forth above. Tsay et al. and Gordon et al. do not

specifically disclose the time period is an integration period of the analog photocell.

However, it is well known in the art to provide correct timing and integration in such an A/D converter circuit to obtain a desired conversion. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the time period as the integration time of the photocell in the apparatus of Tsay et al. in view of Gordon et al. to provide the desired optimal A/D conversion.

Response to Arguments

9. Applicant's arguments with respect to claims 16, 18-24, 36-36 and 38-42 have been considered but are moot in view of the new ground(s) of rejection.

Further regarding claim 16, Applicant asserts that Borg et al. do not disclose the scaled version of the output of the analog photocell being based at least in part on the reference voltage. Examiner disagrees. Applicant admits that the reference voltage of Borg et al. shifts the level of the signal. Since the output of the S/H amplifier is a scaled and level shifted version of the output of the analog photocell, the output of the S/H amplifier is based at least in part on the reference voltage.

Thus, as set forth above, this rejection is proper.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta, can be reached on (703) 308-4852. The fax phone number for the organization where the application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl
April 8, 2003


Que T. Le
Primary Examiner